

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-189532
(43)Date of publication of application : 04.07.2003

(51)Int.Cl. H02K 5/22
F24F 7/06
F24F 7/10
H01R 9/00
H02K 5/04

(21) Application number : 2001-377116

(71)Applicant : TOSHIBA CORP

(22) Date of filing : 11.12.2001

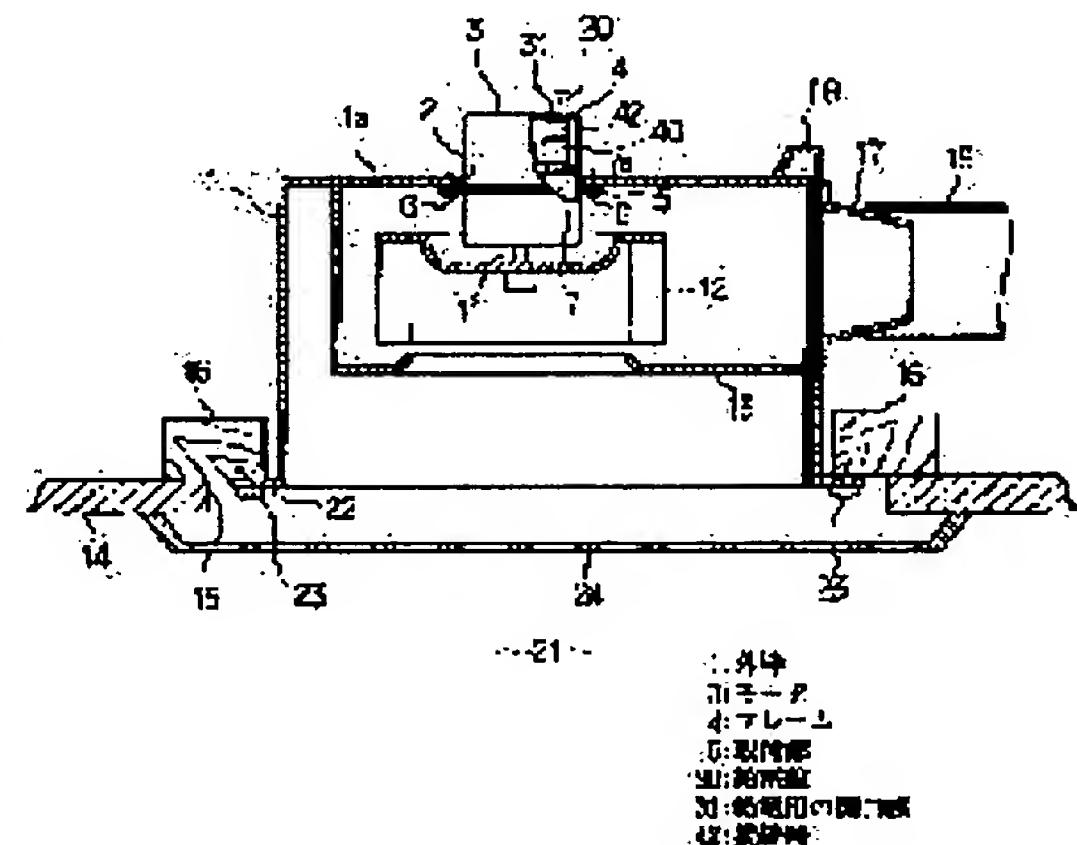
(72)Inventor : YAMADA TAKESHI

(54) MOTOR FOR VENTILATOR

(57)Abstract:

PROBLEM TO BE SOLVED: To easily remove a motor from the outer frame of a ventilator.

SOLUTION: In a motor 3 whose frame 4 has a flange (mount) 5 to be attached to the outer frame 1 of the ventilator from inside and which has an opening 31 for power supply at a section positioned outward of the outer frame 1 in its attachment state, the opening 31 for power supply is made at the back wall of the frame 4 at a section positioned outside the frame 1 so that a power supply cable 20 jutted out of the opening 31 for power supply of the motor 3 may not get caught by the outer frame 1 when removing the motor 3 from inside the outer frame 1. Hereby, the motor 3 can be removed without going so far as to remove the outer frame 1 from a ceiling 14.



LEGAL STATUS

[Date of request for examination] 19.10.2004

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The motor for ventilating fans characterized by the frame forming opening for the electric supply in the back wall of the part located in the method of outside [outer frame / of a frame / said] in what has opening for electric supply into the part located in the method of outside [outer frame / said] in the state of attachment while having the attachment section attached in the outer frame of a ventilating fan from the inner direction.

[Claim 2] The motor for ventilating fans according to claim 1 characterized by having a connector for feeder connection inside a frame corresponding to opening for electric supply.

[Claim 3] The motor for ventilating fans according to claim 1 characterized by equipping opening for electric supply with the connector for feeder connection.

[Claim 4] The motor for ventilating fans according to claim 3 by which the connector for feeder connection is characterized by having the contact section which contacts the external surface of a frame.

[Claim 5] The motor for ventilating fans according to claim 3 or 4 by which the connector for feeder connection is characterized by having the stop section stopped by the inside of a frame.

[Claim 6] The motor for ventilating fans according to claim 1 characterized by enabling selection wearing of either of the connector which forms also in the circumferential side attachment wall of a frame, and connects a feeder to these openings from the method of the back, and the connector which connects a feeder from the side while forming opening for electric supply in the back wall of a frame.

[Claim 7] The motor for ventilating fans according to claim 6 characterized by for the connector with which opening was equipped blockading one opening in a feeder connection part, and blockading opening of another side by the extension of housing.

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the motor for ventilating fans which improved the structure for electric supply.

[0002]

[Description of the Prior Art] Conventionally, the ventilating fan for ducts consists of in the ventilating fan, as shown in drawing 8. A motor 3 to the opening 2 formed in back wall 1a of an outer frame 1 namely, upwards from a lower part. Namely, the attachment section slack flange 5 which was inserted in from the way among outer frames 1 to the method of outside, and was formed in the periphery of circumferential side-attachment-wall 4a of the frame 4 of this motor 3. It is contacted by the inferior surface of tongue of the periphery section of opening 2, and the motor 3 is attached in the outer frame 1 when being bound tight by outer frame back wall 1a with two or more screw threads 6 from a way among outer frames 1.

[0003] The motor 3 has the stator 7 and the rotator 8 inside, the opening 10 for the electric supply by which the connector 9 for supplying electric power to coil 7a of a stator 7 was formed in circumferential side-attachment-wall 4a of a frame 4 is equipped, and this is located in the way outside the outer frame 1 in the state of attachment of the motor 3 to the above-mentioned outer frame 1. On the other hand, the ventilation impeller 12 is attached in the revolving shaft 11 of the motor 3 projected in the outer frame 1, and the casing 13 which surrounds this ventilation impeller 12 is attached in the interior of an outer frame 1.

[0004] To the above ventilating fan, the opening 15 for ventilating-fan anchoring is formed in the head lining 14 of a house, and *** 16 is formed in the rear face of the periphery section of this. Furthermore, the connection plate 18 which has the duct connection cylinder 17 is attached in the one side (drawing Nakamigi side) of the *** 16, and the duct 19 for exhaust air is connected to the duct connection cylinder 17.

[0005] the outer frame 1 after it carries out a deer and a ventilating fan connects the feeder 20 of a house to a connector 9 -- the opening 15 of head lining 14 -- the interior of a room of the upper part from a lower part, i.e., a house, -- it inserts in from 21 to an underpart-of-the-roof part, and the inferior surface of tongue of *** 16 is further contacted in the flange 22 formed in the periphery of the opening of an outer frame 1 -- making -- the interior of a room -- it is attached in head lining 14 by binding tight from 21 to *** 16 with two or more screw threads 23. In addition, 24 shows covering, and after anchoring of the outer frame [as opposed to above-mentioned *** 16 for this] 1, it has attached it so that the opening of this may be covered to an outer frame 1.

[0006]

[Problem(s) to be Solved by the Invention] If it is going to demount a motor 3 from a way among outer frames 1, attaching an outer frame 1 in head lining 14 when need, such as check of a motor 3 and exchange, is produced in the case of the above-mentioned conventional thing, the feeder 20 in the condition of it having been located in the way outside the outer frame 1, and having jutted out of the motor 3 is caught in the periphery section of the opening 2 of outer frame back wall 1a, and cannot demount a motor 3. for this reason, removal of a motor 3 -- an outer frame 1 -- from head lining 14 -- demounting -- the interior of a room -- draw in 21, and demount a connector 9 from a motor 3 on it, or demount a feeder 20 from a connector 9, and pass the procedure of demounting a motor 3 from an outer frame 1 -- it needed to carry out and was troublesome.

[0007] It is in offering the motor for ventilating fans which offers the motor for ventilating fans by which removal from the outer frame of a ventilating fan can mainly do the purpose easily by making this invention in view of an above-mentioned situation therefore, in addition is made to selection of the connection

direction of the feeder according to the situation of a ventilating-fan attach point.

[0008]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the motor for ventilating fans of this invention is characterized by for the frame to form opening for the electric supply in the back wall of the part located in the method of outside [outer frame / of a frame / said] in what has opening for electric supply into the part located in the method of outside [outer frame / said] in the state of attachment, while having the attachment section attached in the outer frame of a ventilating fan from the inner direction (invention of claim 1).

[0009] When demounting a motor from the outer frame of a ventilating fan according to this thing, even if opening for that electric supply is formed in the frame back wall of the part located in the method of outside [outer frame] and draws from a way the feeder jutted out of opening for electric supply of a motor among outer frames, it is not caught in an outer frame. Therefore, it is not necessary to demount an outer frame from head lining, and removal of a motor can be performed.

[0010] In this case, it is good to have a connector for feeder connection inside a frame corresponding to opening for electric supply (invention of claim 2). At this thing, since a connector is covered with the frame of a motor, protection of a connector can be performed with the frame of a motor.

[0011] Moreover, the connector for feeder connection is good also as a configuration with which opening for electric supply is equipped (invention of claim 3). In this thing, the nest of a connector can do those all by not inserting into the frame of a motor.

[0012] Furthermore, the connector with which opening for above-mentioned electric supply is equipped is good to have the contact section which contacts the external surface of a frame (invention of claim 4). At this thing, the receptacle of the chip box (chip box which inserts a connector in the connection partner inside a frame, and is connected) which builds a connector into a frame, and the chip box which inserts a feeder in the incorporated connector and is connected to it is made with the frame which the contact section contacted.

[0013] In addition, the connector with which opening for electric supply is equipped may have the stop section stopped by the inside of a frame (invention of claim 5). At this thing, while the omission of the connector (it inserted in the connection partner inside a frame, and connected) built into the frame can prevent in the stop section stopped by the inside of a frame, the stop of the chip box which draws out the feeder inserted in the connector can be performed with the frame which stopped the stop section.

[0014] It is good to, enable selection wearing of either of the connector which forms also in the circumferential side attachment wall of a frame while forming opening for electric supply in the back wall of a frame, and connects a feeder to these openings from the method of the back, and the connector which connects a feeder from the side on the other hand (invention of claim 6).

[0015] In this thing, in the state of attachment of a ventilating fan, if the allowances of a tooth space are in the method of the back which is the method of the outside of shaft orientations of the motor projected out of the outer frame of this ventilating fan It is good to equip opening for electric supply with the connector which connects a feeder from the method of the back, and if there are no allowances of a tooth space in the method of the outside of shaft orientations of a motor (method of the back), it is good to equip opening for electric supply with the connector which connects a feeder from the side (if the allowances of a tooth space are in the side which is a method of the outside of the direction of a path of a motor). Namely, it becomes it comes not only to be able to perform removal from the outer frame of a ventilating fan easily, but possible to selection of the connection direction of the feeder according to the situation of the attach point of a ventilating fan.

[0016] And the connector with which opening was equipped in this case is good to blockade one opening in a feeder connection part, and to blockade opening of another side by the extension of housing (invention of claim 7). In this thing, it can blockade without leaving opening for electric supply, and the sealing nature of a motor is not spoiled.

[0017]

[Embodiment of the Invention] Hereafter, it explains with reference to drawing 1 per 1st example of this invention thru/or drawing 3 . First, to drawing 1 , the configuration of the ventilating fan for ducts is shown also in the ventilating fan, and identically to the opening 31 for electric supply of a motor 3, and the configuration of the ventilating fan for ducts shown in previous drawing 8 except connector 40 and SL terminal 42 therefore, this gives the same sign to the same part as it, and omits explanation.

[0018] The opening 31 for electric supply of a motor 3 is beforehand formed in back wall 4b of a part located in the way outside the outer frame 1 of the above-mentioned ventilating fan for ducts, and the part

which it side-attachment-wall [circumferential] 4a Approaches especially (drawing Nakamigi side) among the frame 4 of the motor 3 attached in the outer frame 1 of the above-mentioned ventilating fan for ducts, as shown in a detail at drawing 2. The internal configuration of a motor 3 is shown in drawing 2 again, and the stator 7 arranged in the interior of a frame 4 has coil 7a, where a bobbin 32 is looped around. The bobbin 32 has the terminal-block fixed part 33 in the left-hand side section in drawing. The rotator 8 arranged in the interior of a stator 7 has the revolving shaft 11 in the core, and is supporting it by the bearing 34 and 35 which arranged this revolving shaft 11 in the drawing Nakagami section and the lower part in a frame 4.

[0019] And the terminal block 36 is arranged on a bobbin 32. This terminal block 36 inserts the conductor 37 in which a part is shown to drawing 3, fabricates it with synthetic resin, and that conductor 37 constitutes the circuit for supplying electric power to coil 7a of said stator 7 from a side which omitted illustration by drawing 3, and it constitutes the terminal 38 which stands up from a side illustrated to drawing 3 R>3. The connector housing 39 which carries out opening to a terminal block 36 and one in the upper part is formed in the perimeter of a terminal 38, and these constitute the connector 40 of a female form.

[0020] Moreover, by protruding on an inferior surface of tongue the attachment foot 41 shown in drawing 2, inserting this attachment foot 41 in said terminal-block fixed part 33, and fixing to a terminal block 36, the terminal block 36 was attached in the bobbin 32 (stator 7), and the circuit for supplying electric power to coincidence at coil 7a of said stator 7 is connected to that coil 7a.

[0021] The deer was carried out, and as shown in drawing 3, the SL (screw loess) terminal 42 which is that example is connected to the connector 40 of said female type in a connector and this case. In the housing 43 made of synthetic resin, this SL terminal 42 has contained the conductor 44 and the supporter 45, and forms the insertion opening 46 which faces among them from the method of drawing Nakagami which is the method of the back of a motor 3 at housing 43. Moreover, housing 43 consists of subject section 43a by the side of the method of drawing Nakagami of having the insertion opening 46, and male form connector housing section 43b by the side of a lower part, and the forked connection 47 extended from the conductor 44 is located in the male form connector housing section 43b.

[0022] With this configuration, the SL terminal 42 is inserted into a frame 4 through the opening 31 for electric supply of the motor 3 formed in the above-mentioned frame back wall 4b, and male form connector housing section 43b is further inserted into the female form connector 40 of said terminal block 36. Then, a connection 47 is hung and connected to a terminal 38. Moreover, the SL terminal 42 is located in the interior of a frame 4 <TXF FR=0001 HE=250 WI=080 LX=0200 LY=0300> in this condition corresponding to the opening 31 for electric supply.

[0023] And the point which exfoliated the pre-insulation of the feeder 20 of a house is inserted in the SL terminal 42 through the insertion opening 46 in this condition from the opening 31 for electric supply. Then, every time the point of the feeder 20 is pinched by a conductor 44 and the supporter 45 and it pulls it to a conductor 44, from the connection part of the above-mentioned connection 47 and a terminal 38, further, through the conductor 37 (connection circuit) of a terminal block 36, electrical connection of it is carried out to coil 7a of said stator 7, and, also mechanically, it is held at coincidence.

[0024] after a ventilating fan connects a feeder 20 to the SL terminal 42 in this way -- like the above-mentioned -- an outer frame 1 -- the opening 15 of head lining 14 -- the interior of a room of the upper part from a lower part, i.e., a house, -- it inserts in from 21 to an underpart-of-the-roof part, and the inferior surface of tongue of *** 16 is further contacted in the flange 22 of an outer frame 1 -- making -- the interior of a room -- it attaches in head lining 14 by binding tight from 21 to *** 16 with two or more screw threads 23.

[0025] Now, when the need of demounting a motor 3 for check of a motor 3, exchange, etc. is produced in the state of above-mentioned attachment, covering 24 is first demounted from an outer frame 1, subsequently casing 13 is demounted, and the ventilation impeller 12 is demounted from the revolving shaft 11 of a motor 3. And a motor 3 is demounted from an outer frame 1 by loosening *** 6. At this time, even if the opening 31 for that electric supply is formed in frame back wall 4b instead of frame periphery side-attachment-wall 4a of a part located in the method of outside [outer frame / 1 / of a ventilating fan] and draws from a way the feeder 20 in the condition of having jutted out of the opening 31 for electric supply of a motor 3, among outer frames, it is not caught in an outer frame 1. Therefore, it is not necessary to demount an outer frame 1 from head lining 14, removal of a motor 3 can be performed, and, in the case of the thing of this configuration, removal of the motor 3 from the outer frame 1 of a ventilating fan can be performed easily in this way.

[0026] In addition, in order to perform check, exchange, etc. of the demounted motor, it is necessary to demount a feeder 20 from the SL terminal 42. On the other hand, by the SL terminal's 42 equipping housing

43 with the release button which is not illustrated besides the above-mentioned each part article, and pressing this release button by tools, such as a driver What is necessary is just to draw [frame / 4 / of a motor 3] out a feeder 20 further from the SL terminal 42, after doing in this way, since point 45a (refer to drawing 3) of a supporter 45 separated from the feeder 20 and pinching of the feeder 20 by this supporter 45 and the conductor 44 was canceled.

[0027] In addition, since it is considering as the configuration which has the SL terminal 42 inside the frame 4 of a motor 3 corresponding to the opening 31 for electric supply in the case of the thing of the above-mentioned configuration and the SL terminal 42 is covered with this with the frame 4 of a motor 3, protection of the SL terminal 42 can be performed with the frame 4 of a motor 3.

[0028] To the above, drawing 4 thru/or drawing 7 show the 2nd and 3rd examples of this invention, gives the same sign to the same part as the 1st example, respectively, omits explanation, and describes only a different part.

[0029] In the 2nd example shown in [2nd example] drawing 4 and drawing 5 The SL terminal 51 as a connector which replaces the above-mentioned SL terminal 42 is greatly formed in the upper part in drawing from the SL terminal 42. the periphery of the topmost part of the housing 52 of this -- the contact section 53 -- for example, the collar covering the perimeter -- it forms in a ** and the stop section 54 is formed in the periphery of a lower part which separated the distance of a plate Health and Welfare Minister this of frame back wall 4b of a motor 3 rather than it in the shape of [two or more / partial] a pawl.

[0030] In addition, the contact section 53 has stopped the magnitude in the magnitude which does not project in the direction of a path from the frame 4 of a motor 3. Moreover, housing 52 forms the periphery dimension except the contact section 53 and the stop section 54 in opening 31 and *** identitas for electric supply of a motor 3. Furthermore, housing 52 is considered as the configuration which has subject section 52a which contains the same above-mentioned conductor 56 and same above-mentioned supporter 57 as a conductor 44 and a supporter 45, and male form connector housing section 52b which contains the above-mentioned connection 47 and the same connection 58 while it has the above-mentioned insertion opening 46 and the same insertion opening 55.

[0031] Moreover it has equipped opening 31 by inserting the SL terminal 51 in the opening 31 for electric supply of a motor 3, making the inside of a frame 4 stop the stop section 54, and making the contact section 53 contact the external surface of a frame 4 with this configuration, male form connector housing section 52b was inserted into the female form connector 40 of a terminal block 36, and the connection 58 is connected to a terminal 38 at it and coincidence. Thus, in what was constituted, the nest of the SL terminal 51 is made by not inserting the all into the frame 4 of a motor 3, and the nest of the SL terminal 51 is made so much easily.

[0032] Moreover, by having the contact section 53 to which the SL terminal 51 contacts the external surface of a frame 4 in this case The chip box (chip box which inserts the SL terminal 51 in the female form connector 40 of the terminal block 36 which is the connection partner of the frame 4 interior, and is connected) which builds the SL terminal 51 into a frame 4, It can prevent that the receptacle of the chip box which inserts a feeder 20 and is connected has by being made for the incorporated SL terminal 51 with the frame 4 which the contact section 53 contacted, and big force which spoils connection with stator winding 7a of this in a terminal block 36 acts.

[0033] The SL terminal 51 also has the stop section 54 stopped by the inside of a frame 4. In addition, by this While the omission of the SL (it inserted and connected with female form connector 40) terminal 51 built into the frame 4 is made in the stop section 54 stopped by the inside of a frame 4 It can prevent that the big force in which the stop of the chip box which draws out the feeder 20 inserted in the SL terminal 51 has by the ability doing with the frame 4 which stopped the stop section 54, and spoils connection with stator winding 7a of this in a terminal block 36 also in this case acts.

[0034] In the 3rd example shown in [3rd example] drawing 6 and drawing 7 , while forming the opening 61 for electric supply in back wall 4b of the frame 4 of a motor 3, the opening 62 for electric supply is formed also in circumferential side-attachment-wall 4a of the frame 4 of a motor 3. In this case, those openings 61 and 62 are put in a row to one, and it is made to carry out selection wearing of the SL terminal 63 or the SL terminal 64 as a connector which replaces the above-mentioned SL terminals 42 and 51 at these (drawing 6 shows the condition of having equipped with the SL terminal 63, and drawing 7 shows the condition of having equipped with the SL terminal 64).

[0035] Among both the above-mentioned SL terminals 63 and 64, the SL terminal 63 is considered as the configuration which has subject section 65a which contains the same above-mentioned conductor 67 and same above-mentioned supporter 68 as a conductor 44 and a supporter 45, and male form connector housing

section 65b which contains the sideways connection 69 unlike the above-mentioned connection 47 while it has the above-mentioned insertion opening 46 and the insertion opening [being the same (upper part opening)] 66 in housing 65. Furthermore, housing 65 has the above-mentioned stop section 54 and the same stop section 71 while it has extension 65c of the gestalt extended to the method of drawing 6 Nakamigi from subject section 65a, in addition has the above-mentioned contact section 53 and the same contact section 70.

[0036] On the other hand, the SL terminal 64 is considered as the configuration which has subject section 72a which contains a sideways conductor 74 and a sideways supporter 75 unlike the above-mentioned conductor 44 and a supporter 45, and male form connector housing section 72b which contains the sideways connection 76 unlike the above-mentioned connection 47 while it has the insertion opening 73 which carries out opening to housing 72 in the side unlike the above-mentioned insertion opening 46. Furthermore, housing 72 forms the above-mentioned stop section 54 and the same stop section 78 while it has extension 72c of the gestalt extended to the method of drawing 7 Nakagami from subject section 72a, in addition forms the above-mentioned contact section 53 and the same contact section 77.

[0037] And unlike the above-mentioned terminal 38, in the terminal block 36 in a motor 3, the connector 81 of a female form consists of a sideways terminal 79 and connector housing 80 which surrounds this and carries out opening to the side to them. When equipping openings 61 and 62 with the SL terminal 63, insert the SL terminal 63 in openings 61 and 62, the inside of a frame 4 is made to stop the stop section 71, and the contact section 70 is made to contact the external surface of a frame 4 with this configuration, as shown in drawing 6. Thereby, male form connector housing section 65b is inserted into the female form connector 81 of a terminal block 36, and a connection 69 is connected to a terminal 79 again.

[0038] Where openings 61 and 62 are equipped with the SL terminal 63 in this way A feeder 20 by inserting in the SL terminal 63 through the insertion opening 66 from the upper part which is a method of the back of a motor 3 If it is pinched by a conductor 67 and the supporter 68 and pulls to a conductor 67, from the connection part of the above-mentioned connection 69 and a terminal 79, further, through the conductor 37 (connection circuit) of a terminal block 36, electrical connection is carried out to coil 7a of said stator 7, and, also mechanically, it is held at coincidence. Therefore, the SL terminal 63 is a connector which connects a feeder 20 from the method of the back. Moreover, in this condition, the SL terminal 63 blockades opening 61 in the connection part (subject section 65a of housing 65) of a feeder 20, and blockades opening 62 by extension 65c of housing 65.

[0039] On the other hand, when equipping openings 61 and 62 with the SL terminal 64, insert the SL terminal 64 in openings 61 and 62, the inside of a frame 4 is made to stop the stop section 78, and the contact section 77 is made to contact the external surface of a frame 4, as shown in drawing 7. Thereby, male form connector housing section 72b is inserted into the female form connector 81 of a terminal block 36, and a connection 76 is connected to a terminal 79 again.

[0040] Where openings 61 and 62 are equipped with the SL terminal 64 in this way A feeder 20 by inserting in the SL terminal 64 through the insertion opening 73 from the side of a motor 3 If it is pinched by a conductor 74 and the supporter 75 and pulls to a conductor 74, from the connection part of the above-mentioned connection 76 and a terminal 79, further, through the conductor 37 (connection circuit) of a terminal block 36, electrical connection is carried out to coil 7a of said stator 7, and, also mechanically, it is held at coincidence. Therefore, the SL terminal 64 is a connector which connects a feeder 20 from the side. Moreover, in this condition, the SL terminal 64 blockades opening 62 in the connection part (subject section 72a of housing 72) of a feeder 20, and blockades opening 61 by extension 72c of housing 72.

[0041] In addition, although both the contact sections 70 and 77 that contacted the external surface of a frame 4 in these cases are located in a way outside a frame 4, they make these protrusion dimensions the dimension which is not applied to the periphery section of the opening 2 for motor attachment in the outer frame 1 of a ventilating fan, i.e., the dimension which does not check removal of the motor 3 out of an outer frame 1.

[0042] Thus, in what was constituted, it is in the attachment condition of a ventilating fan, and if the allowances of a tooth space are in the method of the back which is the method of the outside of shaft orientations of the motor 3 projected out of the outer frame 1 of this ventilating fan, it will be good to equip openings 61 and 62 with the SL terminal 63 which is the connector which connects a feeder 20 from the method of the back, and removal of the motor 3 from the outer frame 1 of a ventilating fan can be easily performed like the above-mentioned in this case.

[0043] On the other hand, if there are no allowances of a tooth space by the low attic 82 being in the method of the outside of shaft orientations of a motor 3 (method of the back) etc. as shown in drawing 7, it will be

good to equip openings 61 and 62 with the SL terminal 64 which is the connector which connects a feeder 20 from the side (if the allowances of a tooth space are in the side which is a method of the outside of the direction of a path of a motor 3), and can do in this way to selection of the connection direction of the feeder 20 according to the situation of the attach point of ventilating fan.

[0044] In addition, the SL terminals 63 and 64 with which openings 61 and 62 were equipped in this case blockade one side of the openings 61 and 62 in the connection part of a feeder 20, and he is trying to blockade another side by the extensions 65a and 72a of housing 65 and 72. It can blockade by this, without leaving the openings 61 and 62 for electric supply, and can avoid spoiling the sealing nature of a motor 3.

[0045] In addition, openings 61 and 62 are not put in a row to one, but may be formed separately. Moreover, you may make it insert and connect to the female form connectors 40 and 81 the connector illustrated with SL terminal through all examples as a connector of a male form which connects the feeder 20 except SL terminal by thread fastening etc. Furthermore, in a motor 3, it does not have a terminal block 36, but the female form connectors 40 and 81 etc. are good also as a configuration connected to stator winding 7a through a path cord from the connection partner of a connector.

[0046] In addition, originally other need components, such as a current fuse contained in the circuitry of a terminal block 36, may be built in a connector, and the circuitry of a terminal block 36 can be easily made by it. Furthermore, a ventilating fan may not be restricted to the ventilating fan for ducts, either, but may be a ventilating fan for pipes etc.

[0047]

[Effect of the Invention] As explained above, according to the motor for ventilating fans of this invention, removal from the outer frame of a ventilating fan can be easily performed mainly from having formed opening for electric supply in the back wall of the part located in the method of outside [outer frame / of a frame / ventilating-fan]. Moreover, especially, opening for electric supply is formed in the back wall and the circumferential side attachment wall of a frame, and it can do to selection of the connection direction of the feeder according to the situation of a ventilating-fan attach point in that whose selection wearing of either of the connector which connects a feeder to these openings from the method of the back, and the connector which connects a feeder from the side was enabled.

[Translation done.]

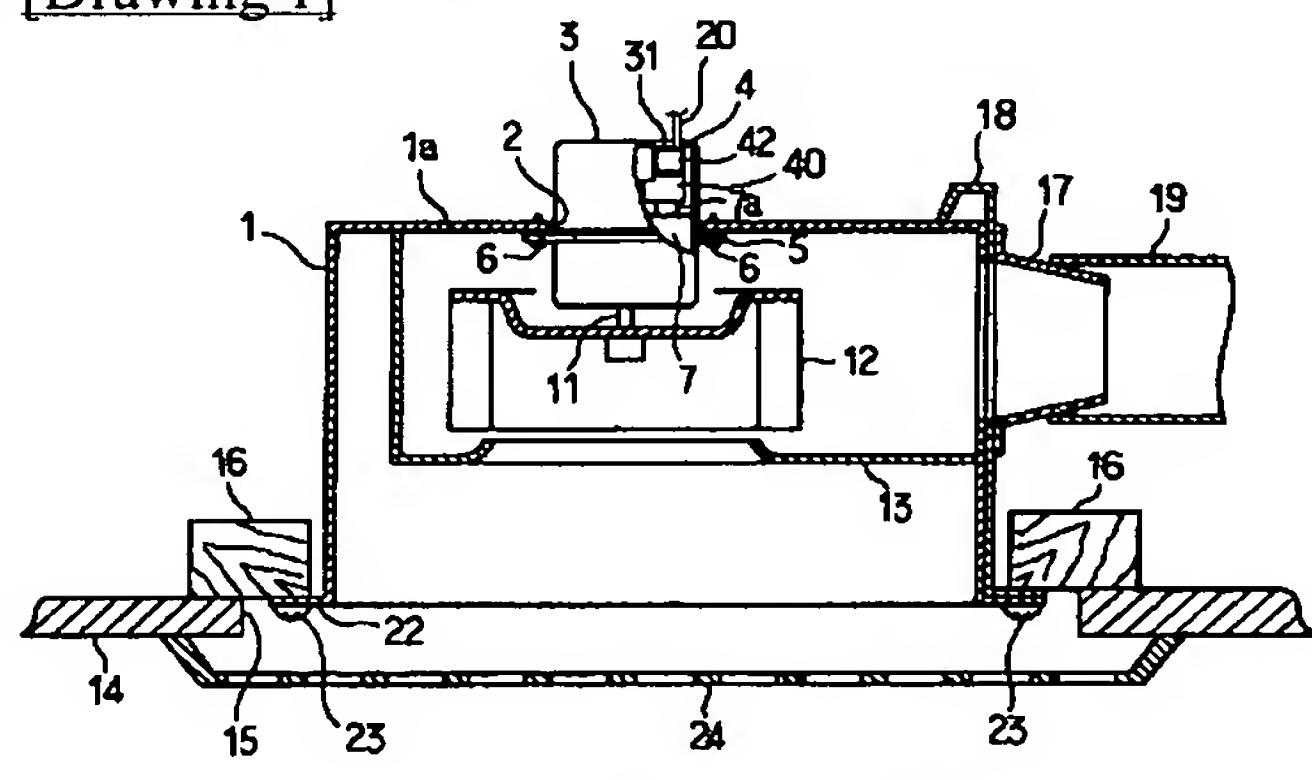
* NOTICES *

JPO and NCIPPI are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

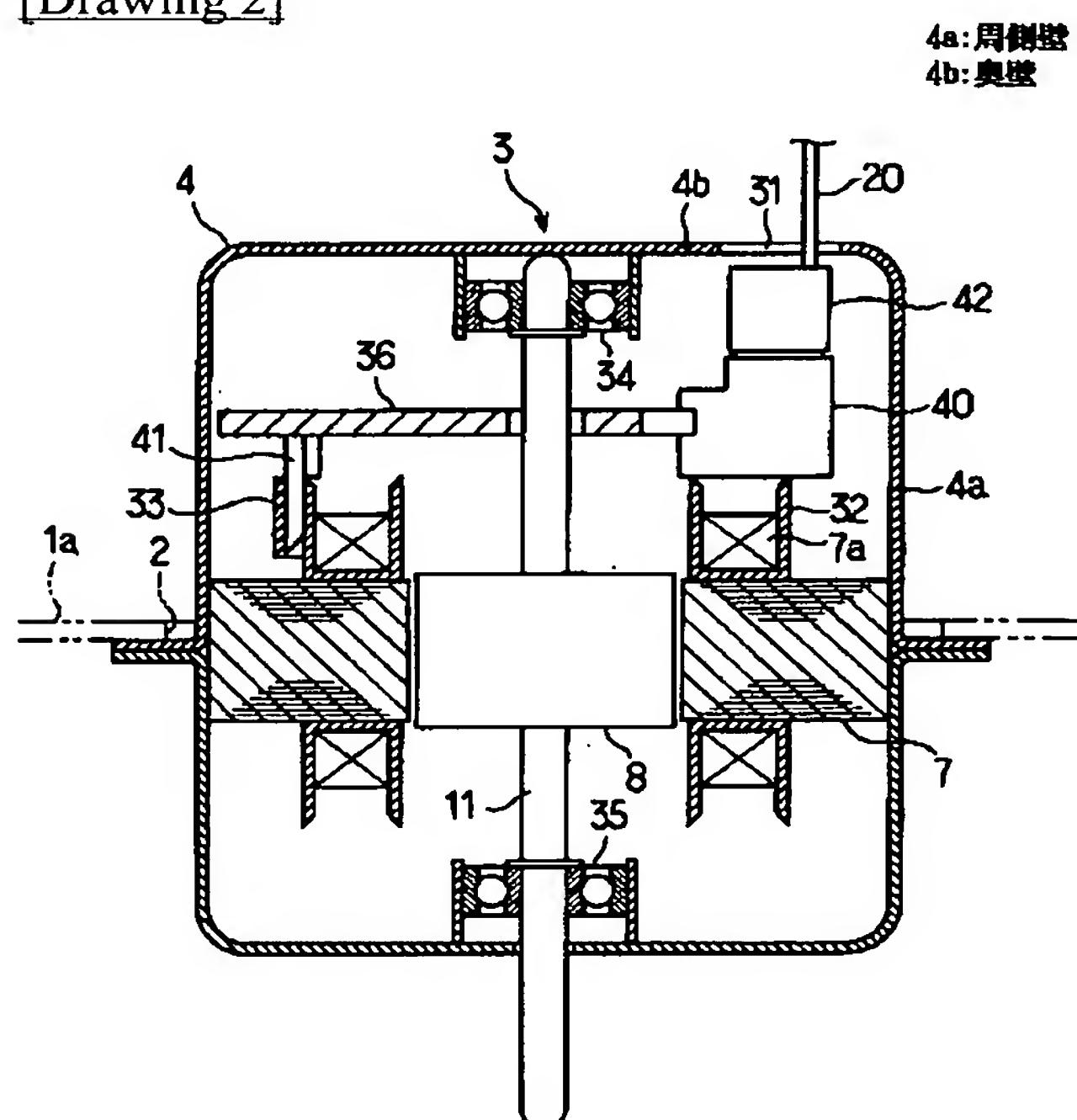
[Drawing 1]



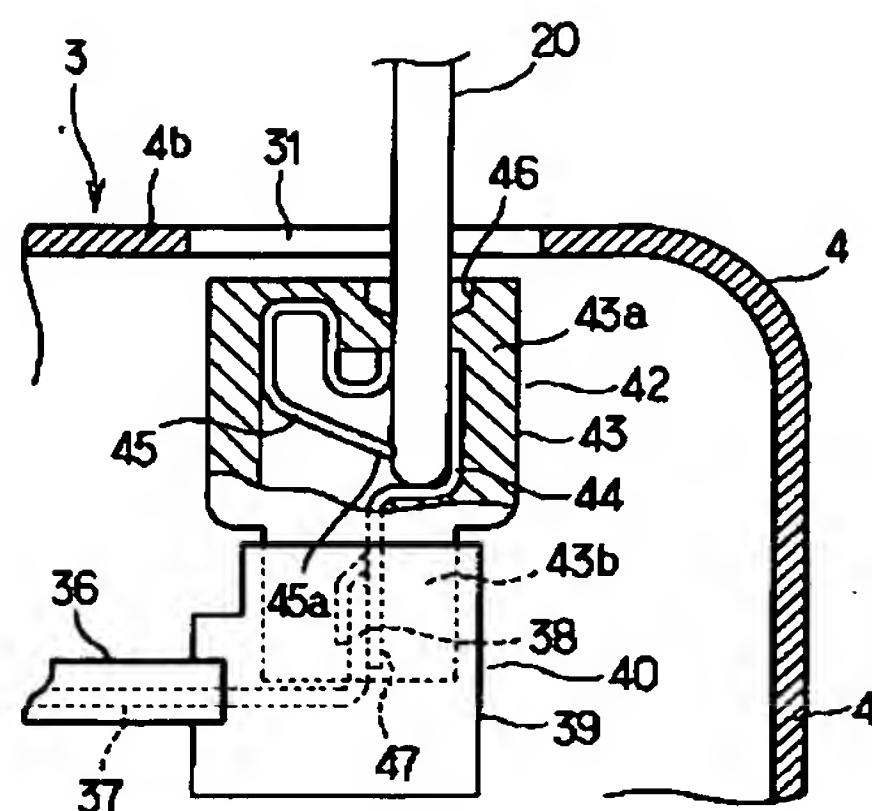
~21~

1:外枠
3:モータ
4:フレーム
5:取付部
20:給電線
31:給電用の開口部
42:接続器

[Drawing 2]

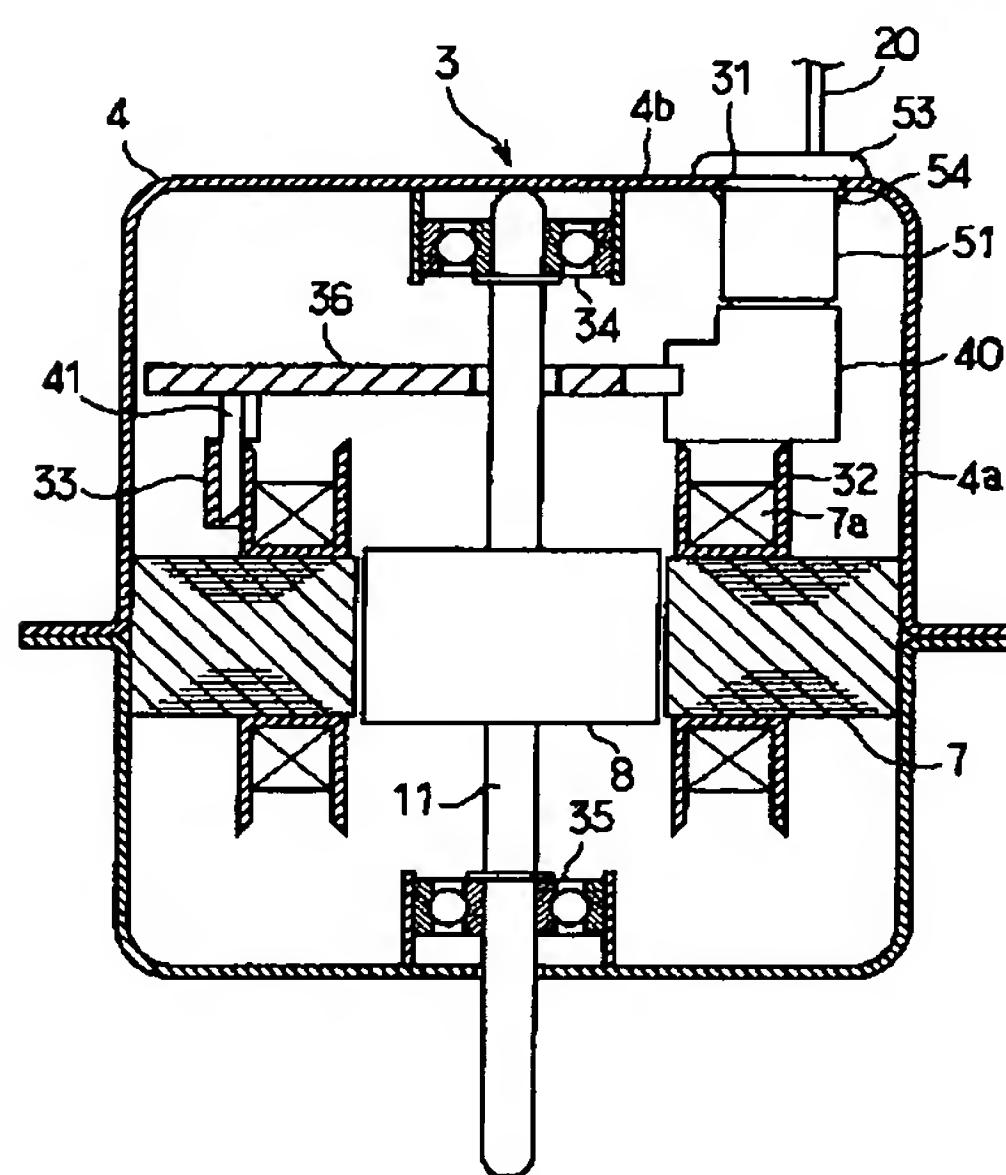


[Drawing 3]

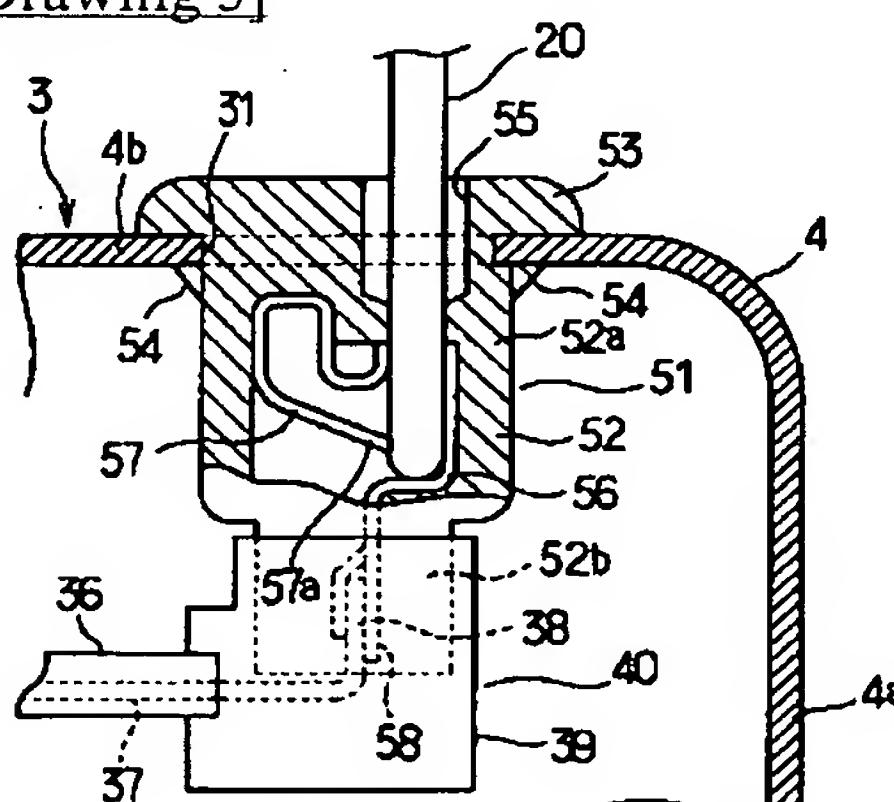


[Drawing 4]

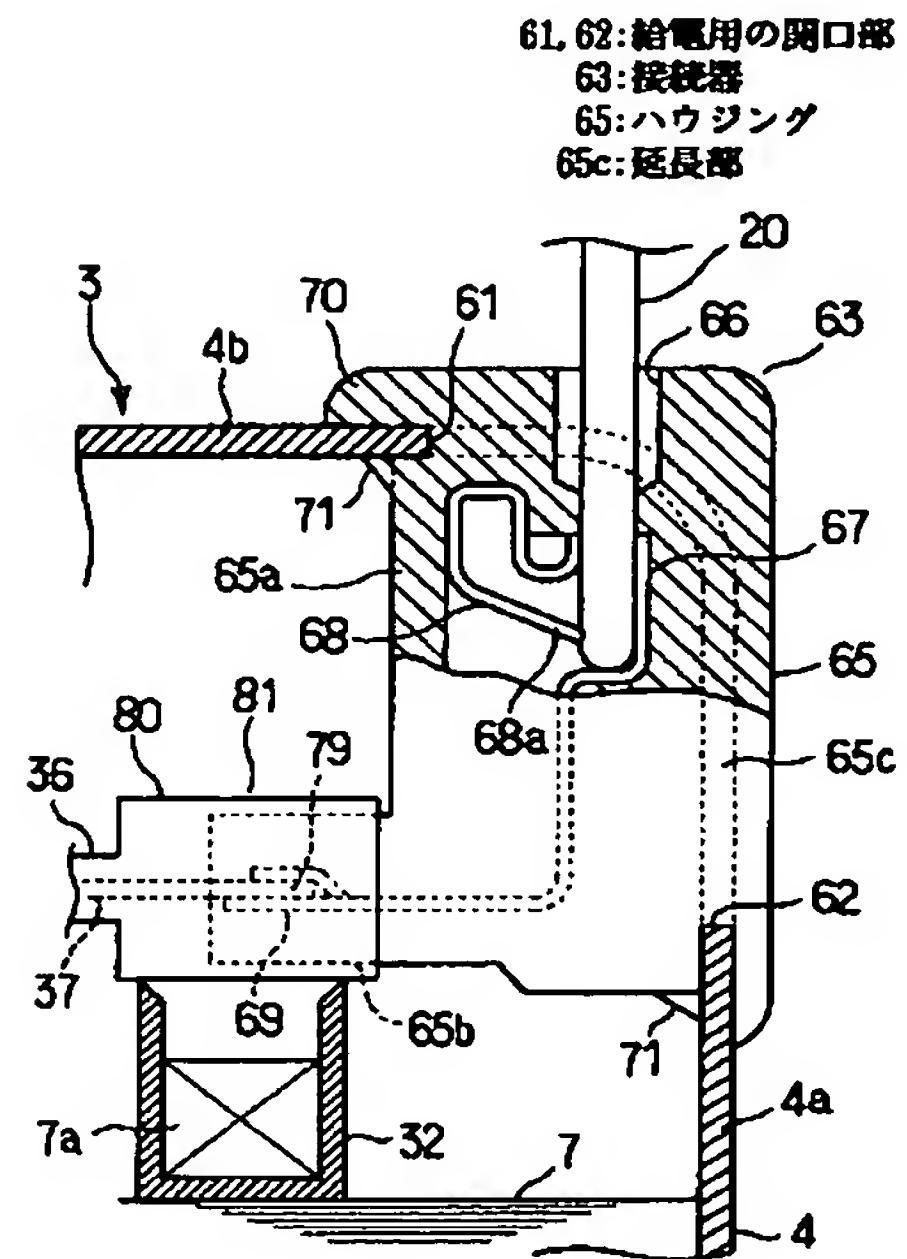
51:接続器
53:当接部
54:係止部



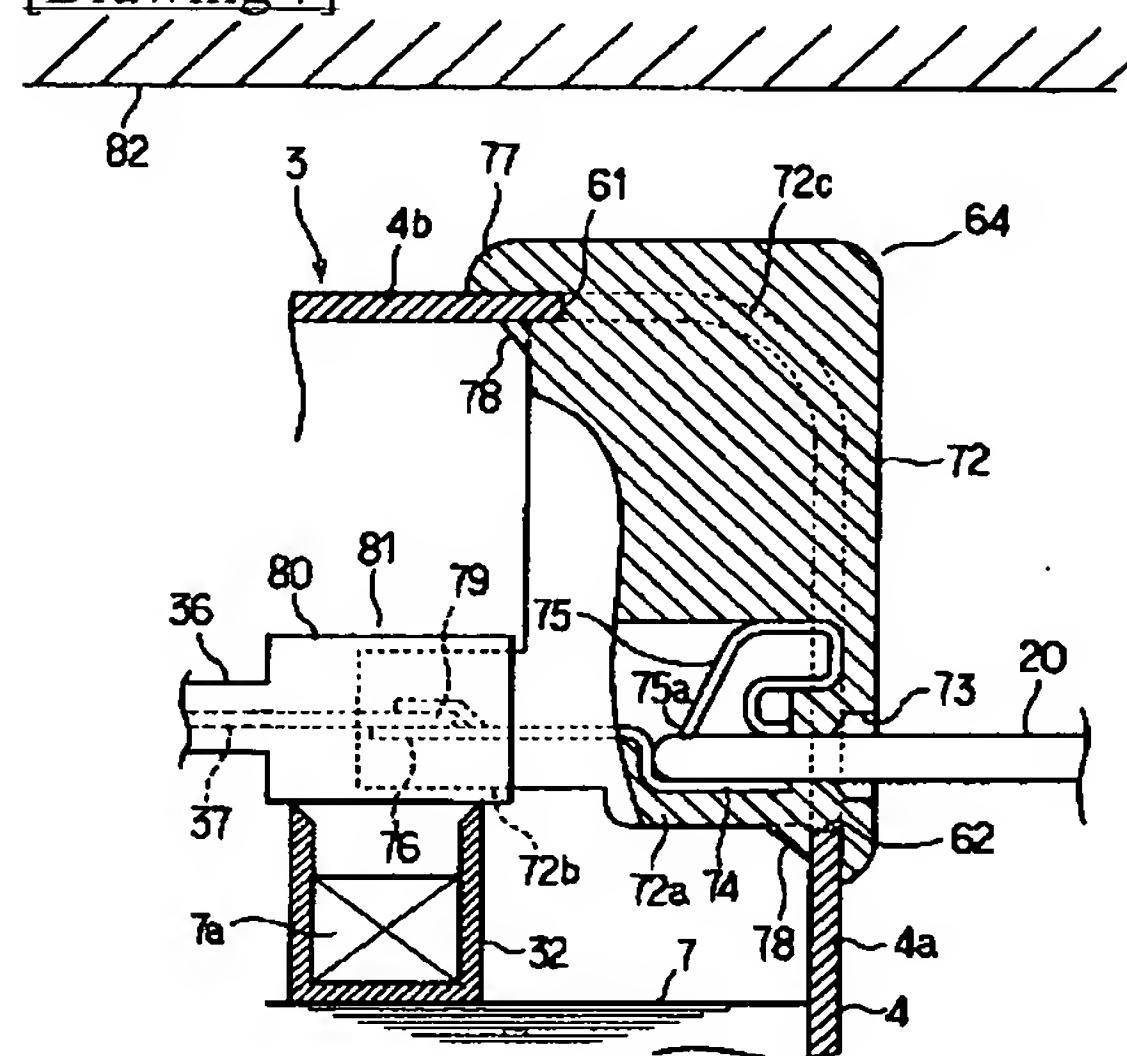
[Drawing 5]



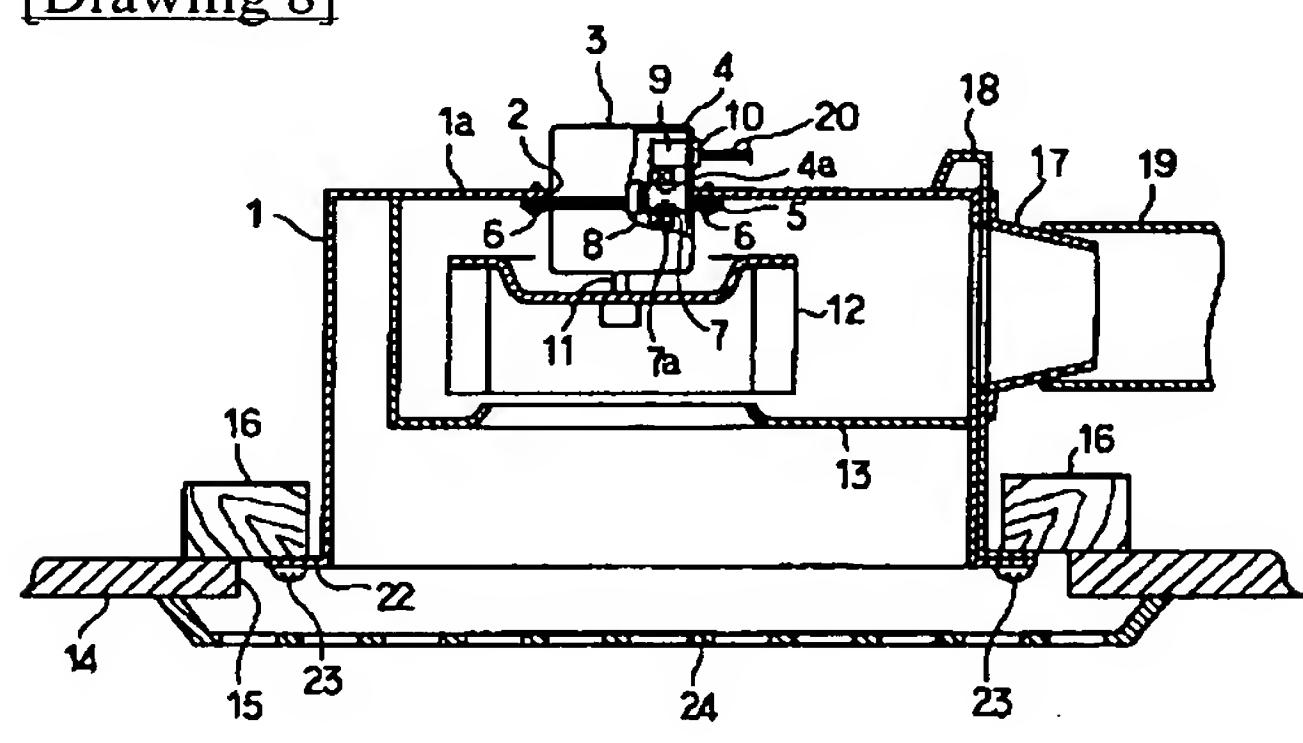
[Drawing 6]



[Drawing 7]



[Drawing 8]



[Translation done.]

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-189532
 (43)Date of publication of application : 04.07.2003

(51)Int.CI.

H02K 5/22
 F24F 7/06
 F24F 7/10
 H01R 9/00
 H02K 5/04

(21)Application number : 2001-377116

(71)Applicant : TOSHIBA CORP

(22)Date of filing : 11.12.2001

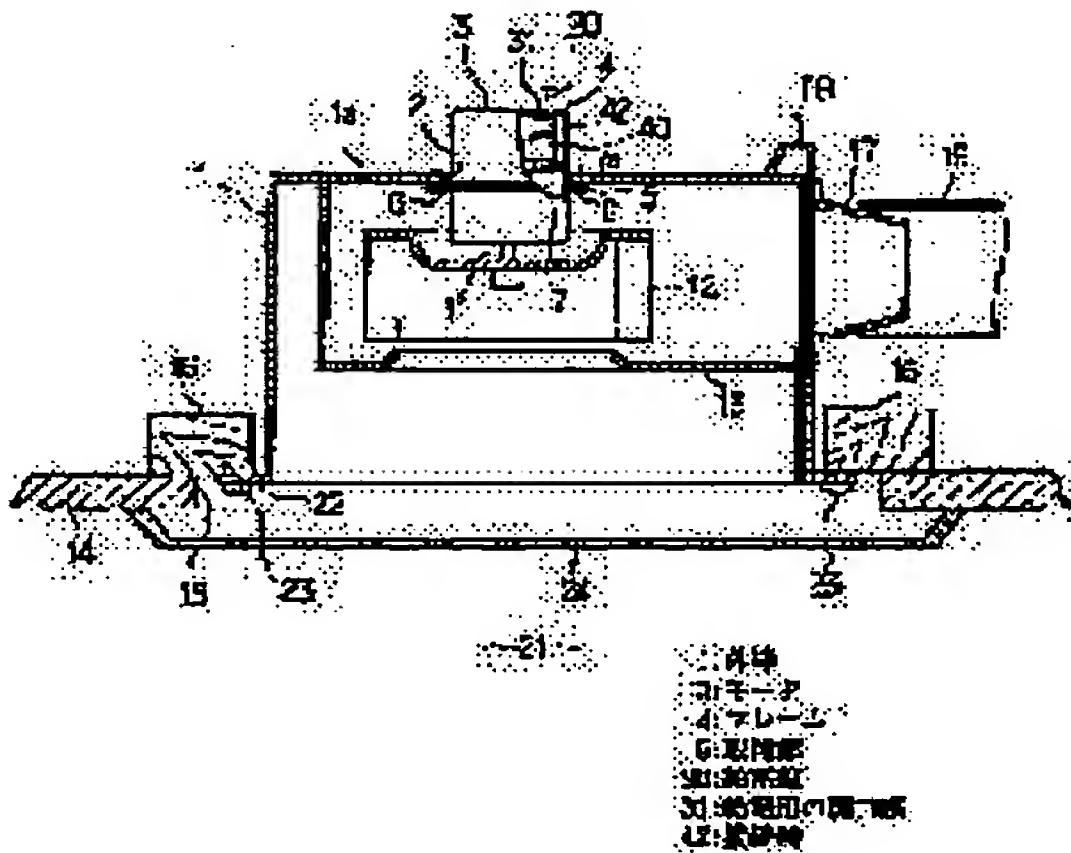
(72)Inventor : YAMADA TAKESHI

(54) MOTOR FOR VENTILATOR

(57)Abstract

PROBLEM TO BE SOLVED: To easily remove a motor from the outer frame of a ventilator.

SOLUTION: In a motor 3 whose frame 4 has a flange (mount) 5 to be attached to the outer frame 1 of the ventilator from inside and which has an opening 31 for power supply at a section positioned outward of the outer frame 1 in its attachment state, the opening 31 for power supply is made at the back wall of the frame 4 at a section positioned outside the frame 1 so that a power supply cable 20 jutted out of the opening 31 for power supply of the motor 3 may not get caught by the outer frame 1 when removing the motor 3 from inside the outer frame 1. Hereby, the motor 3 can be removed without going so far as to remove the outer frame 1 from a ceiling 14.



LEGAL STATUS

[Date of request for examination] 19.10.2004

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

①

(19)日本国特許庁 (JP)

(12) 公開特許公報 (A)

(11)特許出願公開番号
特開2003-189532
(P2003-189532A)

(43)公開日 平成15年7月4日(2003.7.4)

(51)Int.Cl. ⁷	識別記号	F I	テーマート(参考)
H 02 K 5/22		H 02 K 5/22	3 L 058
F 24 F 7/06		F 24 F 7/06	A 5 E 086
7/10	101	7/10	101 F 5 H 605
H 01 R 9/00		H 01 R 9/00	A
H 02 K 5/04		H 02 K 5/04	

審査請求 未請求 請求項の数 7 OL (全 8 頁)

(21)出願番号 特願2001-377116(P2001-377116)

(22)出願日 平成13年12月11日(2001.12.11)

(71)出願人 000003078
株式会社東芝
東京都港区芝浦一丁目1番1号

(72)発明者 山田 岳史
愛知県瀬戸市穴田町991番地 株式会社東
芝愛知工場内

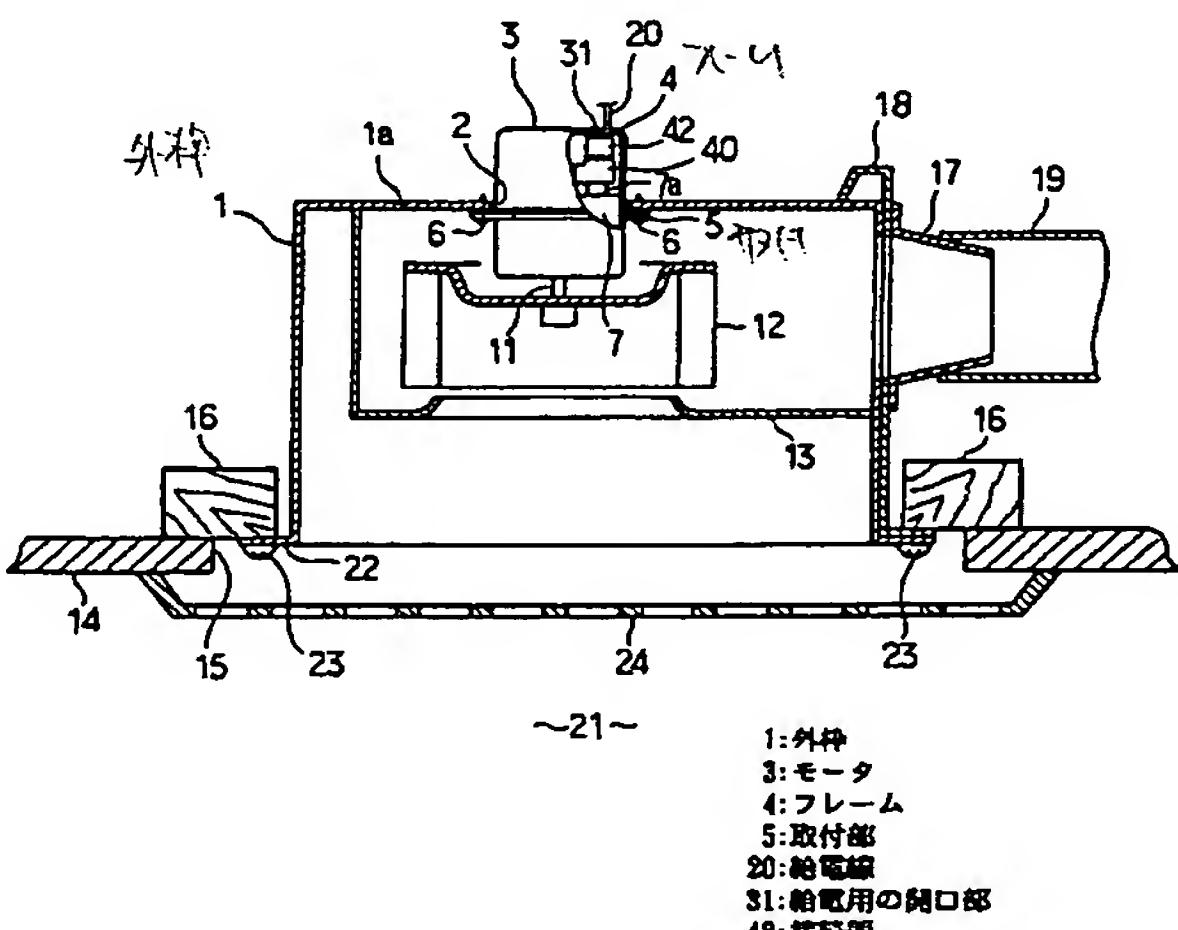
(74)代理人 100071135
弁理士 佐藤 強
F ターム(参考) 3L058 BD02
5E086 CC47 DD03 DD35 JJ04 LL10
LL20
5H605 AA08 BB05 CC01 CC06 DD05
DD09 EC01 EC05 EC08

(54)【発明の名称】換気扇用モータ

(57)【要約】

【課題】換気扇の外枠からのモータの取外しが容易にできるようにする。

【解決手段】フレーム4が、換気扇の外枠1に内方から取付けられるフランジ(取付部)5を有すると共に、その取付状態で外枠1より外方に位置する部分に給電用の開口部31を有するモータ3において、その給電用の開口部31を、外枠1より外方に位置する部分のフレーム4奥壁に形成することにより、外枠1の内方からモータ3を取り外すとき、モータ3の給電用の開口部31から張出した給電線20が外枠1に引掛かることがないようにした。これにより、外枠1を天井14から取り外すまでもなく、モータ3の取外しができる。



【特許請求の範囲】

【請求項1】 フレームが、換気扇の外枠に内方から取付けられる取付部を有すると共に、その取付状態で前記外枠より外方に位置する部分に給電用の開口部を有するものにおいて、
その給電用の開口部を、フレームの前記外枠より外方に位置する部分の奥壁に形成したことを特徴とする換気扇用モータ。

【請求項2】 給電用の開口部に対応して、フレームの内部に給電線接続用の接続器を有することを特徴とする請求項1記載の換気扇用モータ。

【請求項3】 給電用の開口部に、給電線接続用の接続器を装着したことを特徴とする請求項1記載の換気扇用モータ。

【請求項4】 給電線接続用の接続器が、フレームの外側に当接する当接部を有することを特徴とする請求項3記載の換気扇用モータ。

【請求項5】 給電線接続用の接続器が、フレームの内側に係止される係止部を有することを特徴とする請求項3又は4記載の換気扇用モータ。

【請求項6】 給電用の開口部を、フレームの奥壁に形成すると共に、フレームの周側壁にも形成し、これらの開口部に、給電線を奥方から接続する接続器と、給電線を側方から接続する接続器とのいずれかを選択装着可能としたことを特徴とする請求項1記載の換気扇用モータ。

【請求項7】 開口部に装着された接続器が、給電線接続部分で一方の開口部を閉塞し、他方の開口部をハウジングの延長部で閉塞することを特徴とする請求項6記載の換気扇用モータ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は給電のための構造を改良した換気扇用モータに関する。

【0002】

【従来の技術】 従来より、換気扇、中でもダクト用換気扇は、図8に示すように構成されている。すなわち、外枠1の奥壁1aに形成された開口部2に、モータ3が下方から上方へ、すなわち、外枠1の内方から外方へ挿通され、このモータ3のフレーム4の周側壁4aの外周に形成された取付部たるフランジ5が、開口部2の周縁部の下面に当接されて、外枠1の内方から複数のねじ6により外枠奥壁1aに締め付けられることによって、モータ3が外枠1に取付けられている。

【0003】 モータ3は、内部に固定子7や回転子8を有しており、そして、固定子7の巻線7aに給電するための接続器9が、フレーム4の周側壁4aに形成された給電用の開口部10に装着され、これが、上述の外枠1に対するモータ3の取付状態では、外枠1の外方に位置している。一方、外枠1内に突出したモータ3の回転

軸11には、送風羽根車12が取付けられ、この送風羽根車12を囲繞するケーシング13が外枠1の内部に取付けられている。

【0004】 以上の換気扇に対し、家屋の天井14には、換気扇取付けのための開口部15が形成され、これの周縁部の裏面には野縁16が設けられている。更に、その野縁16の一方側(図中右側)には、ダクト接続筒17を有する接続板18が取付けられており、ダクト接続筒17に排気用のダクト19が接続されている。

【0005】 しかし、換気扇は、接続器9に家屋の給電線20を接続した後、外枠1を天井14の開口部15に下方から上方へ、すなわち、家屋の室内21から天井裏部分へ挿通し、更に、外枠1の下面開口部の周縁に形成されたフランジ22を野縁16の下面に当接させて、室内21から複数のねじ23により野縁16に締め付けることによって、天井14に取付けられている。なお、24はカバーを示しており、これを、上述の野縁16に対する外枠1の取付け後、外枠1にこれの下面開口部を覆うように取付けている。

【0006】

【発明が解決しようとする課題】 上記従来のものの場合、モータ3の点検や交換等の必要を生じたとき、外枠1を天井14に取付けたまま、モータ3を外枠1の内方から取外そうとすると、外枠1の外方に位置してモータ3から張出した状態にある給電線20が外枠奥壁1aの開口部2の周縁部に引掛けあって、モータ3を取外すことができない。このため、モータ3の取外しは、外枠1を天井14から取外して室内21に引き込み、その上で、モータ3から接続器9を取り外し、もしくは接続器9から給電線20を取り外し、そして、外枠1からモータ3を取り外すという手順を経て行う必要があり、厄介であった。

【0007】 本発明は上述の事情に鑑みてなされたものであり、従ってその目的は、主として、換気扇の外枠からの取外しが容易にできる換気扇用モータを提供し、そのほか、換気扇取付箇所の状況に応じた給電線の接続方向の選択までできる換気扇用モータを提供するにある。

【0008】

【課題を解決するための手段】 上記目的を達成するために、本発明の換気扇用モータは、フレームが、換気扇の外枠に内方から取付けられる取付部を有すると共に、その取付状態で前記外枠より外方に位置する部分に給電用の開口部を有するものにおいて、その給電用の開口部を、フレームの前記外枠より外方に位置する部分の奥壁に形成したことを特徴とする(請求項1の発明)。

【0009】 このものによれば、換気扇の外枠からモータを取り外すとき、モータの給電用の開口部から張出す給電線は、その給電用の開口部が外枠より外方に位置する部分のフレーム奥壁に形成されていることで、外枠の内方から引いても外枠に引掛けされることがない。よって、外枠を天井から取外すまでもなく、モータの取外しができ

る。

【0010】この場合、給電用の開口部に対応して、フレームの内部に給電線接続用の接続器を有すると良い（請求項2の発明）。このものでは、接続器がモータのフレームで覆われるので、接続器の保護がモータのフレームができる。

【0011】又、給電線接続用の接続器は、給電用の開口部に装着する構成としても良い（請求項3の発明）。このものでは、接続器の組込みが、その全部をモータのフレーム内に挿入するまでもなくできる。

【0012】更に、上述の給電用の開口部に装着する接続器は、フレームの外面に当接する当接部を有すると良い（請求項4の発明）。このものでは、接続器をフレームに組込む折り（接続器をフレーム内部の接続相手に差込み接続する折り）や、組込んだ接続器に給電線を差込み接続する折りの受けが、当接部が当接したフレームができる。

【0013】加えて、給電用の開口部に装着する接続器は、フレームの内面に係止される係止部を有していても良い（請求項5の発明）。このものでは、フレームに組込んだ（フレーム内部の接続相手に差込み接続した）接続器の抜けが、フレームの内面に係止された係止部で防止できると共に、接続器に差込んだ給電線を引き抜く折りの止めが、係止部を係止したフレームができる。

【0014】一方、給電用の開口部は、フレームの奥壁に形成すると共に、フレームの周側壁にも形成し、これらの開口部に、給電線を奥方から接続する接続器と、給電線を側方から接続する接続器とのいずれかを選択装着可能とすると良い（請求項6の発明）。

【0015】このものでは、換気扇の取付状態で、該換気扇の外枠外に突出したモータの軸方向外方である奥方にスペースの余裕があれば、給電線を奥方から接続する接続器を給電用の開口部に装着すると良く、モータの軸方向外方（奥方）にスペースの余裕がなければ（モータの径方向外方である側方にスペースの余裕があれば）、給電線を側方から接続する接続器を給電用の開口部に装着すると良い。すなわち、換気扇の外枠からの取外しが容易にできるようになるだけでなく、換気扇の取付箇所の状況に応じた給電線の接続方向の選択までできるようになる。

【0016】そして、この場合、開口部に装着された接続器は、給電線接続部分で一方の開口部を閉塞し、他方の開口部をハウジングの延長部で閉塞すると良い（請求項7の発明）。このものでは、給電用の開口部を余すことなく閉塞でき、モータの密閉性を損なうことがない。

【0017】

【発明の実施の形態】以下、本発明の第1実施例につき、図1ないし図3を参照して説明する。まず、図1には、換気扇、中でもダクト用換気扇の構成を示しており、これは、モータ3の給電用の開口部31と、コネク

タ40、及びSL端子42以外、先の図8に示したダクト用換気扇の構成と同一であり、従って、それと同一の部分に同一の符号を付して説明を省略する。

【0018】モータ3の給電用の開口部31は、詳細には図2に示すように、上記ダクト用換気扇の外枠1に取付けたモータ3のフレーム4中、上記ダクト用換気扇の外枠1の外方に位置した部分の奥壁4b、中でもその周側壁4a寄り（図中右側）の部分にあらかじめ形成している。図2には又、モータ3の内部構成を示しており、フレーム4の内部に配設した固定子7は、巻線7aをボビン32に巻装した状態で有している。ボビン32は図中左側部に端子台固定部33を有している。固定子7の内部に配設した回転子8は、中心部に回転軸11を有しており、この回転軸11をフレーム4内の図中上部と下部とに配設した軸受34、35により支承している。

【0019】そして、ボビン32上には端子台36を配設している。この端子台36は、図3に一部を示す導体37をインサートして合成樹脂により成形したものであり、その導体37は、図3で図示を省略した側で、前記固定子7の巻線7aに給電するための回路を構成し、図3に図示した側で、上方に起立するターミナル38を構成している。ターミナル38の周囲には、例えば端子台36と一緒に上方に開口するコネクタハウジング39を形成しており、これらによって、雌形のコネクタ40を構成している。

【0020】又、端子台36には、図2に示す取付脚41を下面に突設しており、この取付脚41を前記端子台固定部33に挿入して固定することにより、端子台36をボビン32（固定子7）に取付け、同時に、前記固定子7の巻線7aに給電するための回路をその巻線7aに接続している。

【0021】しかし、前記雌形のコネクタ40には、図3に示すように、接続器、この場合、その一例であるSL（スクリューレス）端子42を接続している。このSL端子42は、合成樹脂製のハウジング43内に、導体44と保持体45とを収納しており、それらの間にモータ3の奥方である図中上方より臨む挿入口46をハウジング43に形成している。又、ハウジング43は、挿入口46を有する図中上方側の主体部43aと、下方側の雄形コネクタハウジング部43bとから成っており、その雄形コネクタハウジング部43b内には、導体44から延長した二股の接続部47が位置している。

【0022】この構成で、SL端子42を、前述のフレーム奥壁4bに形成したモータ3の給電用の開口部31を通してフレーム4内に挿入し、更に、雄形コネクタハウジング部43bを前記端子台36の雌形コネクタ40内に挿入する。すると、接続部47がターミナル38に被さって接続される。又、この状態で、SL端子42は、給電用の開口部31に対応して、フレーム4の内部

に位置する。

【0023】そして、この状態で、SL端子42には、家屋の給電線20の絶縁被覆を剥離した先端部を給電用の開口部31から挿入口46を通して差込む。すると、その給電線20の先端部は、導体44と保持体45とに挟持されて導体44に、ひいては上記接続部47とターミナル38との接続部分から、更に端子台36の導体37(接続回路)を介して、前記固定子7の巻線7aに電気接続され、同時に機械的にも保持される。

【0024】換気扇は、このようにSL端子42に給電線20を接続した上で、前述のごとく、外枠1を天井14の開口部15に下方から上方へ、すなわち、家屋の室内21から天井裏部分へ挿通し、更に、外枠1のフランジ22を野縁16の下面に当接させて、室内21から複数のねじ23により野縁16に締め付けることによって、天井14に取付ける。

【0025】さて、上述の取付状態で、モータ3の点検や交換等のためにモータ3を取り外す必要を生じたときには、まず外枠1からカバー24を取り外し、次いでケーシング13を取り外して、送風羽根車12をモータ3の回転軸11から取り外す。そして、ねじ6を緩めることによってモータ3を外枠1から取り外す。このとき、モータ3の給電用の開口部31から張出した状態にある給電線20は、その給電用の開口部31が換気扇の外枠1より外方に位置する部分のフレーム周側壁4aではなく、フレーム奥壁4bに形成されていることで、外枠の内方から引いても外枠1に引掛かることがない。よって、外枠1を天井14から取り外すまでもなく、モータ3の取り外しができるものであり、かくして、本構成のものの場合、換気扇の外枠1からのモータ3の取り外しが容易にできる。

【0026】なお、取り外したモータの点検や交換等を行うためには、SL端子42から給電線20を取り外す必要がある。これに対して、SL端子42は、ハウジング43に前述の各部品のほかに図示しないリリースボタンを備えており、このリリースボタンをドライバー等の工具で押圧することによって、保持体45の先端部45a

(図3参照)が給電線20から離れ、該保持体45と導体44とによる給電線20の挟持が解除されるので、このようにした上で、給電線20をSL端子42から、更にはモータ3のフレーム4から引き抜けば良い。

【0027】加えて、上記構成のものの場合、給電用の開口部31に対応して、モータ3のフレーム4の内部にSL端子42を有する構成としており、これによって、SL端子42がモータ3のフレーム4で覆われる所以で、SL端子42の保護がモータ3のフレーム4ができる。

【0028】以上に対して、図4ないし図7は本発明の第2及び第3実施例を示すもので、それぞれ、第1実施例と同一の部分には同一の符号を付して説明を省略し、異なる部分についてのみ述べる。

【0029】[第2実施例] 図4及び図5に示す第2実

施例においては、上述のSL端子42に代わる接続器としてのSL端子51を、SL端子42より図中上方に大きく形成して、これのハウジング52の最上部の外周に、当接部53を例えばその全周にわたる鉗状に形成し、それよりもモータ3のフレーム奥壁4bの板厚相当の距離を隔てた下側部分の外周に、係止部54を例えば複数の部分的な爪状に形成している。

【0030】なお、当接部53は、その大きさをモータ3のフレーム4から径方向に突出しない大きさに留めている。又、ハウジング52は、当接部53と係止部54とを除く胴回り寸法を、モータ3の給電用の開口部31とほど同じに形成している。更に、ハウジング52は、前述の挿入口46と同様の挿入口55を有すると共に、前述の導体44及び保持体45と同様の導体56及び保持体57を収納する主体部52aと、前述の接続部47と同様の接続部58を収納する雄形コネクタハウジング部52bとを有する構成としている。

【0031】この構成で、SL端子51を、モータ3の給電用開口部31に挿入して、係止部54をフレーム4の内面に係止させ、当接部53をフレーム4の外面に当接させることにより、開口部31に装着している、又、それと同時に、雄形コネクタハウジング部52bを端子台36の雌形コネクタ40内に挿入して、接続部58をターミナル38に接続している。このように構成したもののでは、SL端子51の組込みが、その全部をモータ3のフレーム4内に挿入するまでもなくでき、それだけ、SL端子51の組込みが容易にできる。

【0032】又、この場合、SL端子51がフレーム4の外面に当接する当接部53を有することにより、SL端子51をフレーム4に組込む折り(SL端子51をフレーム4内部の接続相手である端子台36の雌形コネクタ40に差込み接続する折り)や、組込んだSL端子51に給電線20を差込み接続する折りの受けが、当接部53が当接したフレーム4でき、もって、端子台36にこれの固定子巻線7aとの接続を損ねるような大きな力が作用することを防止できる。

【0033】加えて、SL端子51はフレーム4の内面に係止される係止部54をも有しており、これによつて、フレーム4に組込んだ(雌形コネクタ40に差込み接続した)SL端子51の抜けが、フレーム4の内面に係止された係止部54でできると共に、SL端子51に差込んだ給電線20を引き抜く折りの止めが、係止部54を係止したフレーム4でき、もって、この場合も、端子台36にこれの固定子巻線7aとの接続を損ねるような大きな力が作用することを防止できる。

【0034】[第3実施例] 図6及び図7に示す第3実施例においては、モータ3のフレーム4の奥壁4bに給電用の開口部61を形成すると共に、モータ3のフレーム4の周側壁4aにも給電用の開口部62を形成している。この場合、それらの開口部61、62は一つに連ね

ており、これらに前述のSL端子42, 51に代わる接続器としてのSL端子63又はSL端子64を選択装着するようにしている(図6はSL端子63を装着した状態を示し、図7はSL端子64を装着した状態を示している)。

【0035】上記両SL端子63, 64のうち、SL端子63は、ハウジング65に、前述の挿入口46と同様(上方開口)の挿入口66を有すると共に、前述の導体44及び保持体45と同様の導体67及び保持体68を収納する主体部65aと、前述の接続部47と違って横向きの接続部69を収納する雄形コネクタハウジング部65bとを有する構成としている。更に、ハウジング65は、主体部65aから図6中右方へ延長した形態の延長部65cを有しており、そのほか、上述の当接部53と同様の当接部70を有すると共に、上述の係止部54と同様の係止部71を有している。

【0036】一方、SL端子64は、ハウジング72に、前述の挿入口46と違って側方に開口する挿入口73を有すると共に、前述の導体44及び保持体45と違って横向きの導体74及び保持体75を収納する主体部72aと、前述の接続部47と違って横向きの接続部76を収納する雄形コネクタハウジング部72bとを有する構成としている。更に、ハウジング72は、主体部72aから図7中上方へ延長した形態の延長部72cを有しており、そのほか、上述の当接部53と同様の当接部77を形成すると共に、上述の係止部54と同様の係止部78を形成している。

【0037】そして、それらに対し、モータ3内の端子台36には、前述のターミナル38と違って横向きのターミナル79と、これを包囲して側方に開口するコネクタハウジング80とで、雌形のコネクタ81を構成している。この構成で、開口部61, 62にSL端子63を装着する場合には、図6に示したように、SL端子63を、開口部61, 62に挿入して、係止部71をフレーム4の内面に係止させ、当接部70をフレーム4の外面に当接させる。これにより又、雄形コネクタハウジング部65bが端子台36の雌形コネクタ81内に挿入され、接続部69がターミナル79に接続される。

【0038】かくして開口部61, 62にSL端子63を装着した状態では、給電線20は、モータ3の奥方である上方から挿入口66を通してSL端子63内に差込むことにより、導体67と保持体68とに挟持されて導体67に、ひいては上記接続部69とターミナル79との接続部分から、更に端子台36の導体37(接続回路)を介して、前記固定子7の巻線7aに電気接続され、同時に機械的にも保持される。従って、SL端子63は給電線20を奥方から接続する接続器である。又、この状態では、SL端子63は、給電線20の接続部分(ハウジング65の主体部65a)で開口部61を閉塞し、開口部62をハウジング65の延長部65cで閉塞する。

する。

【0039】一方、開口部61, 62にSL端子64を装着する場合には、図7に示したように、SL端子64を、開口部61, 62に挿入して、係止部78をフレーム4の内面に係止させ、当接部77をフレーム4の外面に当接させる。これにより又、雄形コネクタハウジング部72bが端子台36の雌形コネクタ81内に挿入され、接続部76がターミナル79に接続される。

【0040】かくして開口部61, 62にSL端子64を装着した状態では、給電線20は、モータ3の側方から挿入口73を通してSL端子64内に差込むことにより、導体74と保持体75とに挟持されて導体74に、ひいては上記接続部76とターミナル79との接続部分から、更に端子台36の導体37(接続回路)を介して、前記固定子7の巻線7aに電気接続され、同時に機械的にも保持される。従って、SL端子64は給電線20を側方から接続する接続器である。又、この状態では、SL端子64は、給電線20の接続部分(ハウジング72の主体部72a)で開口部62を閉塞し、開口部61をハウジング72の延長部72cで閉塞する。

【0041】なお、これらの場合、フレーム4の外面に当接した当接部70, 77は、ともにフレーム4の外方に位置するものの、これらの突出寸法は、換気扇の外枠1におけるモータ取付用の開口部2の周縁部に掛からない寸法、すなわち、外枠1内からのモータ3の取外しを阻害しない寸法としている。

【0042】このように構成したものでは、換気扇の取付状態で、該換気扇の外枠1外に突出したモータ3の軸方向外方である奥方にスペースの余裕があれば、給電線20を奥方から接続する接続器であるSL端子63を開口部61, 62に装着すると良く、この場合には、前述同様に、換気扇の外枠1からのモータ3の取外しが容易にできる。

【0043】一方、図7に示したように、モータ3の軸方向外方(奥方)に低い屋根裏82があるなどでスペースの余裕がなければ(モータ3の径方向外方である側方にスペースの余裕があれば)、給電線20を側方から接続する接続器であるSL端子64を開口部61, 62に装着すると良く、かくして、換気扇の取付箇所の状況に応じた給電線20の接続方向の選択までできる。

【0044】加えて、この場合、開口部61, 62に装着されたSL端子63, 64は、給電線20の接続部分で開口部61, 62のうちの一方を閉塞し、他方をハウジング65, 72の延長部65a, 72aで閉塞するようしている。これにより、給電用の開口部61, 62を余すことなく閉塞でき、モータ3の密閉性を損なうことのないようにできる。

【0045】なお、開口部61, 62は一つに連ねず、別々に形成されていても良い。又、全実施例を通じて、SL端子で例示した接続器は、SL端子以外、例えば給

電線20をねじ締め等で接続する雄形のコネクタとして、雌形コネクタ40、81に差し込み接続するようにしても良い。更に、モータ3内には端子台36を見えず、雌形コネクタ40、81など、接続器の接続相手から接続線を介して固定子巻線7aに接続する構成としても良い。

【0046】そのほか、接続器には、本来、端子台36の回路構成に含まれる電流ヒューズなど他の必要部品を内蔵しても良く、それによって、端子台36の回路構成を簡単になすことができる。更に、換気扇も、ダクト用換気扇には限らず、パイプ用換気扇などであっても良い。

【0047】

【発明の効果】以上説明したように、本発明の換気扇用モータによれば、主として、給電用の開口部を、フレームの換気扇外枠より外方に位置する部分の奥壁に形成したことより、換気扇の外枠からの取外しが容易にできる。又、特に、給電用の開口部をフレームの奥壁と周側壁とに形成し、これらの開口部に、給電線を奥方から接続する接続器と、給電線を側方から接続する接続器との

いずれかを選択装着可能としたものでは、換気扇取付箇所の状況に応じた給電線の接続方向の選択までできる。

【図面の簡単な説明】

【図1】本発明の第1実施例を示す、モータの一部を破断したダクト用換気扇全体の取付状態における縦断面図

【図2】モータ単体の縦断面図

【図3】モータの主要部分の拡大縦断面図

【図4】本発明の第2実施例を示す図2相当図

【図5】図3相当図

【図6】本発明の第3実施例を示す図3相当図

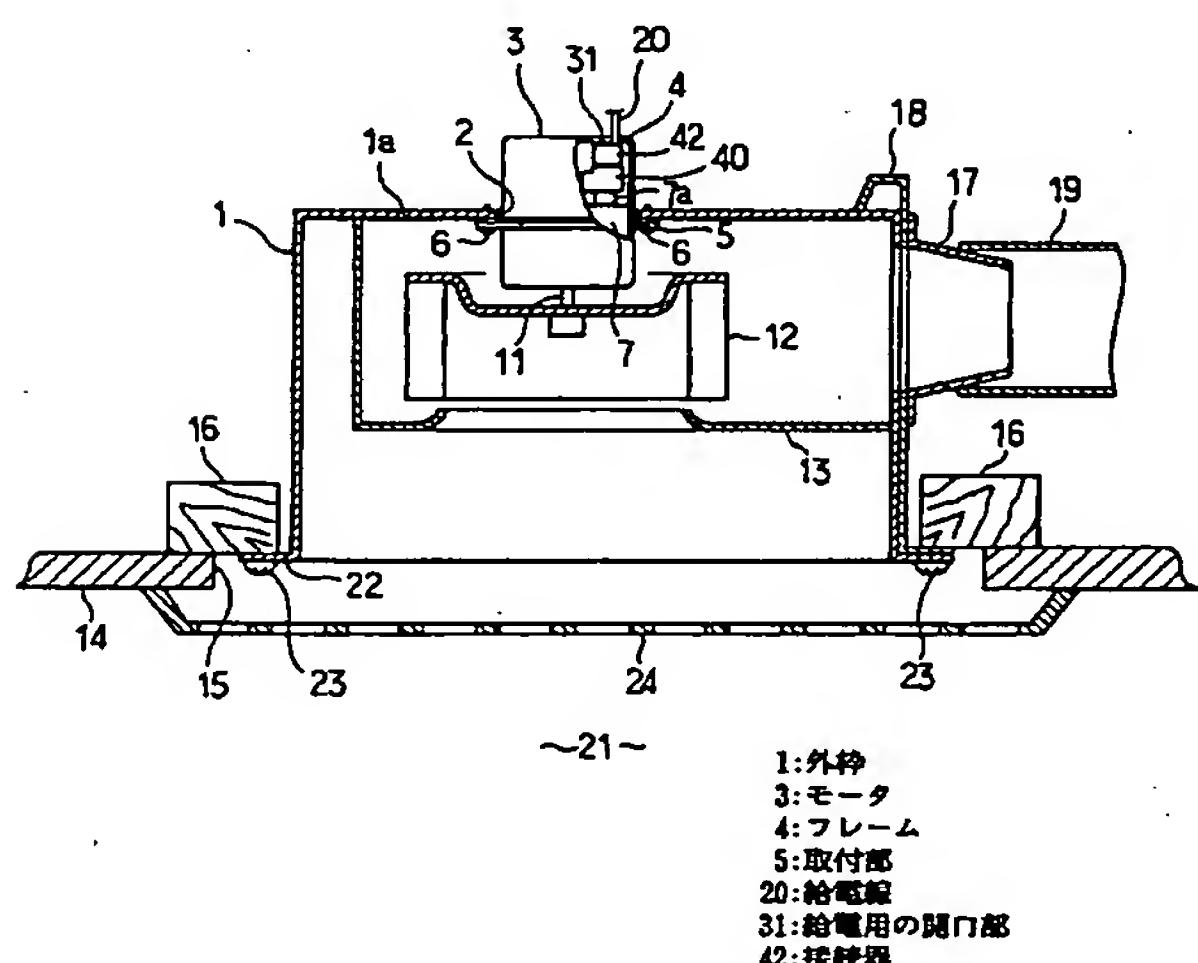
【図7】装着した接続器が異なる図3相当図

【図8】従来例を示す図1相当図

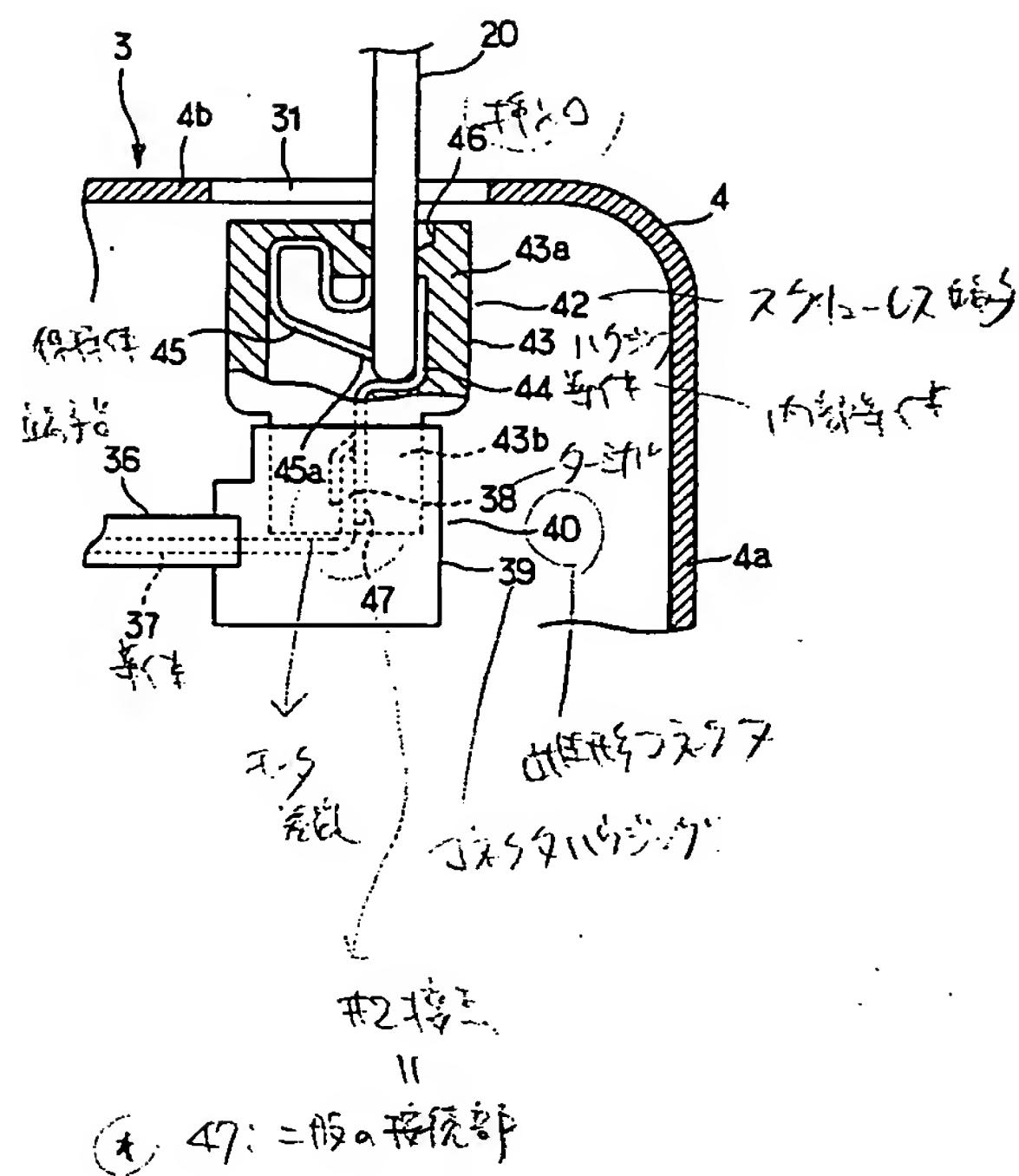
【符号の説明】

1は外枠、3はモータ、4はフレーム、4aは周側壁、4bは奥壁、5はフランジ（取付部）、20は給電線、31は給電用の開口部、42、51はSL端子（接続器）、53は当接部、54は係止部、61、62は給電用の開口部、63、64はSL端子（接続器）、65はハウジング、65cは延長部、72はハウジング、72cは延長部を示す。

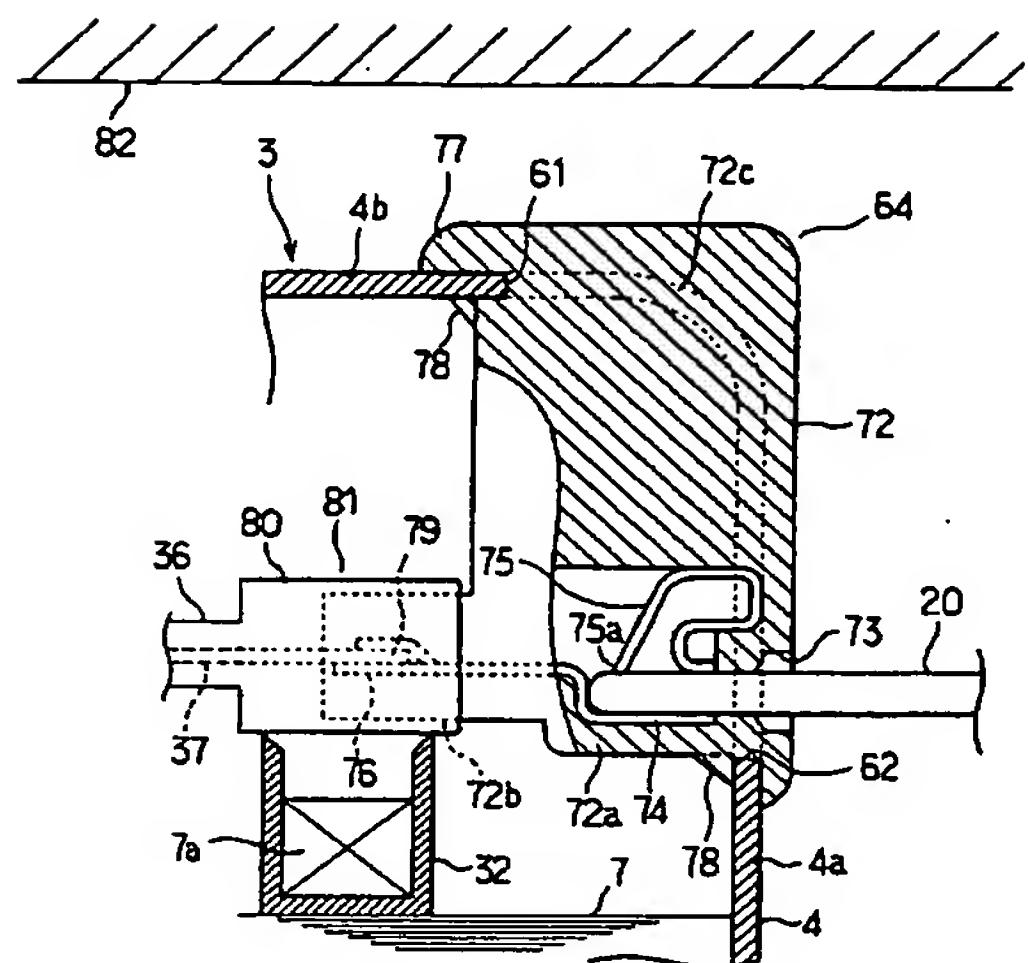
【図1】



【図3】

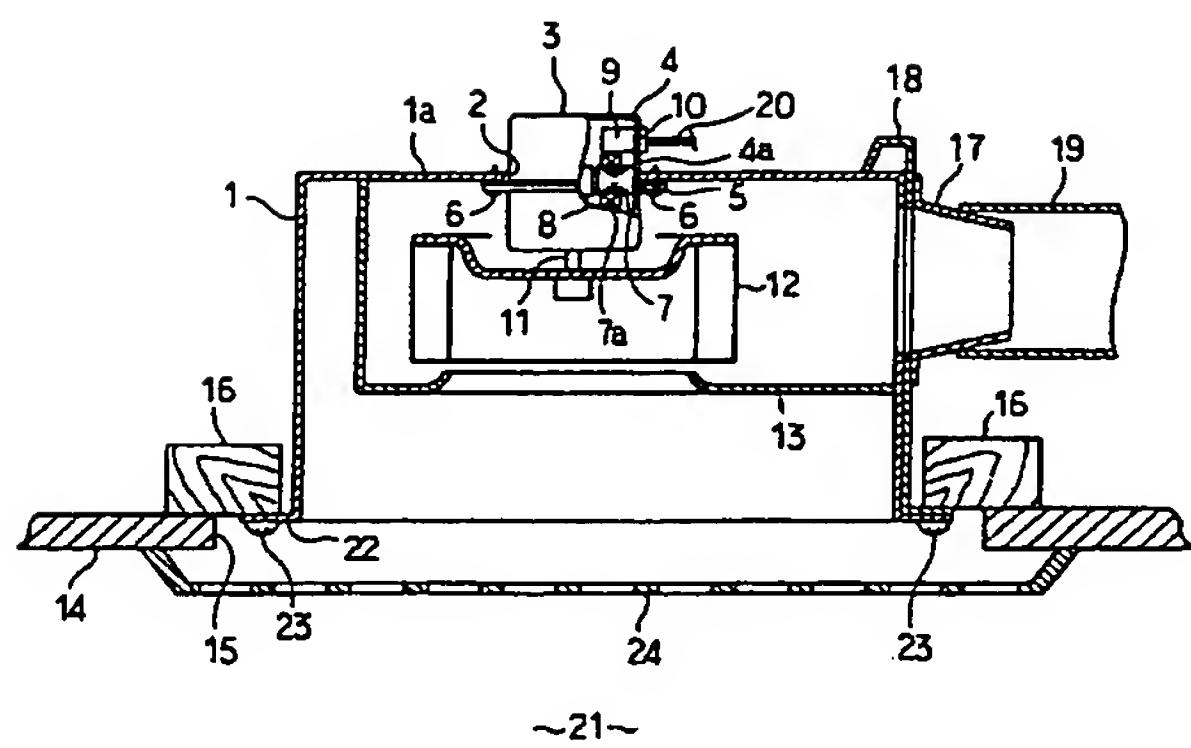


【 7】



64:接続器
72:ハウジング
72c:延長部

[图8]



**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.